



PATENT

Attorney Docket No. 17990-1-1

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

ROGER A. ALLINGTON, ET AL.

Application No. 09/187,472

Filed: November 6, 1998

For: ROASTING SYSTEM

Examiner: D. Becker

Art Unit: 1761

DECLARATION OF
PHILIP A. TORBET

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I, Philip A. Torbet, declare as follows:

1. I have a degree in industrial design that I received in 1967 from Syracuse University of Syracuse, New York, and I have worked as a new product development engineer in a variety of fields since 1967.

2. I have worked in the field of developing, designing, building and operating coffee roasting machines since about 1993. I am currently the Chief Technology officer of the assignee of the above-referenced application, a position that I have held since 1993, and I am a coinventor of the above-captioned patent application. I consider myself to be one of ordinary skill in the art of coffee roasting and coffee roasting equipment.

3. I have participated in all phases of conceiving, developing, constructing, installing and operating coffee roasting machines as described and claimed in the above referenced patent application, and there are currently 15 such machines in operation in diverse supermarkets located in California and other parts of the country. These devices are installed in the interior of supermarkets and at present typically roast about 50 pounds of coffee beans per day, although the actual amount of coffee beans can vary therefrom substantially from day to day and/or from one installation to the next. The coffee bean roasting machines are operated as described and claimed in the above-referenced patent application, and they are not vented to

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the exterior of the supermarket. All air used for coffee roasting in these machines is heated inside the machine, is used to roast the coffee beans in the machines, is thereafter cleansed or filtered so that it is substantially pollutant-free, and is cooled to a temperature of no more than 100° F. The cooled, filtered air is then discharged into the interior of the supermarket.

4. Pollutants generated during coffee roasting include oils, smoke, white plume smoke, hydrocarbons, and volatile organic compounds ("VOCs"), including SO₂, NO₂ and particulates as small as ½ micron. The amount of pollutants, excluding water driven off the coffee beans during roasting, is approximately 8% of the fresh coffee, or about 36 grams per pound of green (fresh) coffee beans roasted.

5. Roasting machines that practice the present invention typically roast coffee beans daily to supply the anticipated daily demand for roasted coffee beans. Depending on the store, this presently requires roasting about 50 pounds, and it is anticipated that this may increase to as much as 100 pounds of coffee beans per day as the machines become increasingly known and accepted. Under such conditions and at an average roasting time for a six-pound batch of coffee beans of about 12 minutes, roasting will take between about one and one-half to three hours. Roasting is typically done once a day, for example in the morning. When roasting about 50 pounds of coffee beans over a one and one-half hour period, or 100 pounds over about a three-hour period, between approximately 1800 grams and 3600 grams of pollutants are generated and released into the interior of an average-size supermarket at the hourly rate of approximately 1200 grams, which would render the supermarket uninhabitable. Moreover, the released pollutants would contaminate the interior of the supermarket, including products for sale, with soot, particulates, oily deposits, and undesirable odors that would keep customers away and damage merchandise.

6. I am familiar with and I have read the prior art references cited against the claims in this application in the Office Action of October 11, 2000, including the Hansen patent (5,690,018), which discloses a device for cooking prefried potatoes.

7. Coffee beans have about 130 different chemical constituents, including but not limited to the constituents mentioned in paragraph 4 above, most of which are not found in ordinary food products. During roasting, heat is quickly and relatively evenly applied to the

beans, thereby subjecting the beans to pyrolysis, which transforms some of the chemicals into others, releases pollutants, and further drives off other constituents of the beans.

8. Coffee roasting differs vastly from cooking prefried potatoes. Coffee beans have an entirely different consistency and structure than potatoes. Coffee beans must be subjected to heat for a much longer period than is necessary for cooking prefried potatoes, so that the coffee beans are chemically altered to give them the desired dark brown color, brittle structure, and aroma. In the process, large amounts of hydrocarbons are driven off, oils are released and partially burned, and chemical reactions occur, which do not occur when cooking prefried potatoes because potatoes lack almost all of the constituents found in coffee beans and/or because chemical reactions are not initiated during the relatively short time while prefried potatoes are cooked. The quantity of pollutants released during coffee roasting (on a per unit basis) is vastly greater than the amount of pollutants released during cooking prefried potatoes. Finally, commercial coffee roasting (in a supermarket, for example) involves the roasting of relatively large quantities of coffee, that is, usually at least about 50 pounds per day, and sometimes significantly more than that, which increases the volume of pollutants generated over a given time period far above anything encountered when cooking individual orders of prefried potatoes. Thus, the problems associated with removing pollutants from the exhaust of a coffee roaster and the exhaust from a prefried potato cooker differ qualitatively and quantitatively, which requires vastly different approaches for effectively removing the pollutants from the respective exhausts. As a consequence, the two processes become incomparable.

9. As a result of the foregoing, one of ordinary skill in the art of coffee roasting would not consult the art of cooking prefried potato pieces, such as the Hansen patent, for guidance concerning the removal of pollutants from exhaust gases generated during coffee roasting so that such gases can be directly vented into closed environments, such as, for example, the interior of supermarkets, because of the vastly greater amounts of and different types of pollutants that are generated during coffee roasting.

10. If the pollutants generated during roasting a six-pound batch of coffee were discharged directly into the interior of an average-size supermarket (having, for example, a

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floor area of 20,000 square feet), the air in the supermarket would quickly become polluted to an extent that would render the air unbreatheable and the interior of the supermarket uninhabitable, which would be in gross violation of applicable air quality and anti-pollution regulations for public establishments, such as EPA (Environmental Protection Agency) standards and OSHA (Occupational Safety & Health Agency) standards.

11. The amount of pollutants generated during coffee roasting is so large that prior art conventional coffee roasting installations, which, for example, might roast coffee in batches of about 100 pounds, required costly anti-pollution devices, such as expensive and energy-consuming afterburners, to comply with atmospheric pollution regulations and restrictions.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, having been warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC §1001, and may jeopardize the validity of this application or any patent resulting therefrom.

Date:

Feb 9, 2001


Philip A. Torbet